AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1-9. (canceled).

10. (original): A method for optical measurement of an optical system, comprising:

- detecting measuring radiation coming from the optical system, and
- determining a distortion error by determining a distortion function from a comparison of detected actual positions of interference fringes with computational desired positions when changing one or more external parameters, the change in the at least one external parameter comprising at least one of a change in the position of a detector arrangement or of a mask structure of a measuring device parallel to a main optical axis, a change in the wavelength of the measuring radiation, and a change in aberrations through adjustment of xy-manipulators or z-manipulators of the measured optical system.

11. (previously presented): The method according to Claim 10, wherein the optical measurement is carried out by an interferometric wave-front measurement technique.

12. (previously presented): The method according to Claim 11, wherein the interferometric wave-length measurement comprises:

- placing a detector arrangement in the beam path downstream of the optical system in order to detect a generated interference pattern of a wavefront within a detection area, and

- placing a dynamic range correction element in the beam path up-stream of the detector arrangement, which element is designed for keeping a variation in a spatially dependent characteristic of a phase of the wavefront forming the interference pattern below a prescribed limit value throughout the detection area.

13. (original): The method according to Claim 11, wherein the interferometric wavefront measurement comprises a measurement by means of lateral shearing interferometry comprising:

- positioning at least one mask structure element in the beam path upstream of the optical system,

- positioning at least one diffraction structure element with at least one periodic diffraction structure in the beam path downstream of the optical system, and

- positioning a detector arrangement in the beam path downstream of the diffraction structure element in order to detect a generated interference pattern of a wavefront within a detection area,

- wherein a set of several diffraction structures of different period lengths are used on the at least one diffraction structure element, and a set of corresponding mask structures are provided on the at least one mask structure element, in order to measure the optical system with

the aid of diffraction structures of different period lengths for at least two different sub-areas of the detection area.

14. (withdrawn): The method according to Claim 11, wherein the interferometric wavefront measurement comprises a measurement by means of point diffraction interferometry comprising:

- positioning a pinhole mask in the beam path upstream of the optical system,
- positioning at least one detector-side shadow mask with at least one pair of a reference pinhole and a signal passage opening spaced apart therefrom in the beam path downstream of the optical system, and
- positioning a detector arrangement in the beam path downstream of the detector-side shadow mask in order to detect a generated interference pattern of a wavefront within a detection area,
- wherein a set of several pairs of reference pinhole and signal passage opening with different spacings of reference pinhole and signal passage opening are used in order to measure the optical system with the aid of pairs of holes with a different spacing of reference pinhole and signal passage opening for at least two different sub-areas of the detection area.

15. (original): A method for optical measurement of an optical system, comprising:

- detecting measuring radiation coming from the optical system, and

- determining and computationally correcting a distortion error of the detected measuring radiation,

- wherein the distortion error is determined by calculating a distortion transformation by means of a calculation of the optical beam path or by a distortion measurement by means of introducing reference patterns into a pupil, or a plane near the pupil, of a measuring optical imaging system, or into a plane conjugate therewith, or by a distortion measurement by means of moiré structures or by determining a distortion function from a comparison of detected actual positions of interference fringes with computational desired positions when changing one or more external parameters, the change in the at least one external parameter comprising at least one of a change in the position of a detector arrangement or of a mask structure of a measuring device parallel to a main optical axis, a change in the wavelength of the measuring radiation, or a change of aberrations by adjusting xy-manipulators or z-manipulators of the measured optical system, and

- wherein a distortion transformation describing the distortion error is determined by at least one of measurement and computation, and the distortion error is corrected computationally by applying the inverse distortion transformation.

16. (previously presented): The method according to Claim 15, wherein the optical measurement is carried out by an interferometric wave-front measurement technique.

17. (original): The method according to Claim 16, wherein the interferometric wavefront measurement comprises a measurement by means of lateral shearing interferometry comprising:

- positioning at least one mask structure element in the beam path upstream of the optical system,

- positioning at least one diffraction structure element with at least one periodic diffraction structure in the beam path downstream of the optical system, and

- positioning a detector arrangement in the beam path downstream of the diffraction structure element in order to detect a generated interference pattern of a wavefront within a detection area,

- wherein a set of several diffraction structures of different period lengths are used on the at least one diffraction structure element, and a set of corresponding mask structures are provided on the at least one mask structure element, in order to measure the optical system with the aid of diffraction structures of different period lengths for at least two different sub-areas of the detection area.

18. (withdrawn): The method according to Claim 16, wherein the interferometric wavefront measurement comprises a measurement by means of point diffraction interferometry comprising:

- positioning a pinhole mask in the beam path upstream of the optical system,

- positioning at least one detector-side shadow mask with at least one pair of a reference pinhole and a signal passage opening spaced apart therefrom in the beam path downstream of the optical system, and

- positioning a detector arrangement in the beam path downstream of the detector-side shadow mask in order to detect a generated interference pattern of a wavefront within a detection area,

- wherein a set of several pairs of reference pinhole and signal passage opening with different spacings of reference pinhole and signal passage opening are used in order to measure the optical system with the aid of pairs of holes with a different spacing of reference pinhole and signal passage opening for at least two different sub-areas of the detection area.

19. (original): The method according to Claim 16, wherein the interferometric wavelength measurement comprises:

- placing a detector arrangement in the beam path downstream of the optical system in order to detect a generated interference pattern of a wavefront within a detection area, and

- placing a dynamic range correction element in the beam path up-stream of the detector arrangement, which element is designed for keeping the variation in the spatially dependent characteristic of a phase of the wavefront forming the interference pattern below a prescribed limit value throughout the detection area.

20. (original): The method according to Claim 19, wherein the interferometric wavefront measurement comprises a measurement by means of lateral shearing interferometry comprising:

- positioning at least one mask structure element in the beam path upstream of the optical system,

- positioning at least one diffraction structure element with at least one periodic diffraction structure in the beam path downstream of the optical system, and

- positioning a detector arrangement in the beam path downstream of the diffraction structure element in order to detect a generated interference pattern of a wavefront within a detection area,

- wherein a set of several diffraction structures of different period lengths are used on the at least one diffraction structure element, and a set of corresponding mask structures are provided on the at least one mask structure element, in order to measure the optical system with the aid of diffraction structures of different period lengths for at least two different sub-areas of the detection area.

21. (withdrawn): The method according to Claim 19, wherein the interferometric wavefront measurement comprises a measurement by means of point diffraction interferometry comprising:

- positioning a pinhole mask in the beam path upstream of the optical system,

- positioning at least one detector-side shadow mask with at least one pair of a reference pinhole and a signal passage opening spaced apart therefrom in the beam path downstream of the optical system, and

- positioning a detector arrangement in the beam path downstream of the detector-side shadow mask in order to detect a generated interference pattern of a wavefront within a detection area,

- wherein a set of several pairs of reference pinhole and signal passage opening with different spacings of reference pinhole and signal passage opening are used in order to measure the optical system with the aid of pairs of holes with a different spacing of reference pinhole and signal passage opening for at least two different sub-areas of the detection area.

22. (previously presented): The method according to claim 11, wherein the interferometric wave-front measurement technique is one of a lateral shearing interferometry technique and a point diffraction interferometry technique.

23. (previously presented): The method according to claim 16, wherein the interferometric wave-front measurement technique is one of a lateral shearing interferometry technique and a point diffraction interferometry technique.